May 18th, 5:00 PM - 7:00 PM

Effect of myeloid-derived suppressor cells on Glioblastoma-immune dynamics

Hannah Anderson
University of Florida, hannahanderson@ufl.edu

Title: Effect of myeloid-derived suppressor cells on Glioblastoma-immune dynamics

Presenter: Hannah Anderson

Co-authors: Gregory Takacs, Duane Harris, Yang Kuang, Jeffrey Harrison, Tracy Stepien

Abstract:

The highly immunosuppressive tumor microenvironment of Glioblastoma multiforme (GBM) leads researchers to consider immunotherapies in hopes of improving treatment outcomes. Monotherapy with anti-PD-1 has proved to be unsuccessful likely due to added layers of immunosuppression besides the PD-L1/PD-1 axis. Murine experiments show that $CCR2^{+}$ myeloid-derived suppressor cells (MDSCs), which suppress T cells, are chemo-kinetically recruited by gliomas to the brain. Further, combination treatment with PD-1 and a CCR2 antagonist unmasked the immune checkpoint inhibitor's ability to reduce tumor growth. To gain insight on glioma-immune dynamics with the goal of future extension to immunotherapy, we develop and analyze an ODE model which includes immunosuppression via the PD-L1/PD-1 axis and MDSCs. We conduct parameter sensitivity analysis in combination with the approximate Bayesian computation rejection method to identify the interaction between the two layers of immunosuppression.